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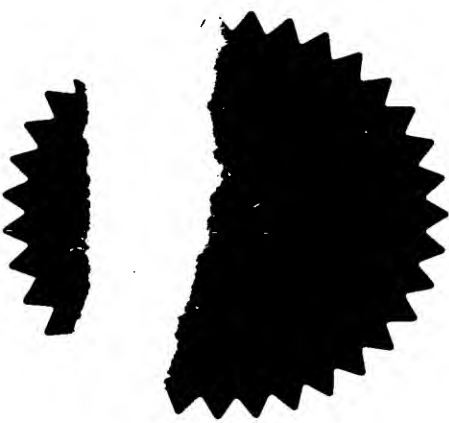
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Dated 27 August 2003



28 MAY 2003

NEWPORT



1/77

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The Patent Office

Cardiff Road  
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1. Your reference

TC-MP100516-GB

2. Patent application number

(The Patent Office will fill in this part)

0312157.1

Z8MAY03 E810493-1 D00107  
P01/7700 0.00-0312157.1

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Aspect Management Limited  
Wrenbury Hall  
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Cheshire CW5 8EJ

08428 724 001

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

GB

4. Title of the invention

PANEL END FITTINGS

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Lloyd Wise, McNeight & Lawrence  
Regent House, Heaton Lane  
Stockport, Cheshire SK4 1BS

Patents ADP number (if you know it)

0845 827 5001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

Yes

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

# Patents Form 1/77

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Continuation sheets of this form

Description 8

Claim(s) 2

Abstract 1

Drawing(s) 2 ~~+~~ 1

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature  
Lloyd Wise, McNeigh & Lawrence

Date  
27 May 2003

12. Name and daytime telephone number of person to contact in the United Kingdom  
A R Collingwood  
0161 480 6394

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## PANEL END FITTINGS

This invention relates to roof structures.

5

The invention has particular application to roof structures for conservatories in which roofing panels, of polycarbonate, polyvinyl chloride or glass for example, are supported by glazing bars.

10       The present invention seeks to provide an improved panel end fitting for accommodating roofing panels of different thicknesses.

15       According to the present invention there is provided a roofing structure comprising at least one roofing panel supported by glazing bars and an end fitting including a first portion underlying one end of the roofing panel and a second portion which overlies the panel, the first and second portions being separate from one another and being connectable together to allow panels of different thicknesses to be accommodated between them.

20       Also according to the present invention there is provided an end fitting for use with a roofing panel supported by glazing bars, the fitting including a first portion being adapted in use to underly one end of a roofing panel and a second portion which is adapted in use to overly the panel, the first and second portions being separate from one another and being connectable together to allow panels of different thicknesses to be  
25       accommodated between them.

The first and second portions may be connectable together via interfitting male and female formations which allow adjustment of the first and second portions to accommodate panels of different thicknesses.

5           One of the first and second portions may be provided with an end stop for co-operation with the roofing panel to prevent the panel from sliding downwardly.

The end stop may be constituted by one of the formations for connecting together the first and second portions.

10

The male and female formations may be connectable in such a way that they are rendered captive against withdrawal of one from the other once properly connected with the roofing panel located therebetween. In this way, the male and female formations may interconnect with each other in such a way as to resist subsequent separation of the  
15           second portion from the first portion so as to prevent a would-be intruder from gaining access to the inside of the conservatory by lifting roof panel and entering through the roof.

For the avoidance of doubt, the phrase "captive against withdrawal" is not to be interpreted in a strict literal sense irrespective of the force exerted in attempting to  
20           withdraw the male formation; rather it is to be interpreted as meaning that withdrawal is not possible without damaging one or other formation or both, e.g. to the extent that it is no longer possible to reassemble them together with the male formation held captive within the female formation.

25           The male and female formations may interconnect with a ratchet-type action.

In one embodiment of the invention, the male formation comprises a pair of divergent legs for reception within the female formation, the legs co-operating in ratchet-like fashion with the female formation.

5 To afford additional security, wedge means may be insertable into the space between the legs to prevent inward flexing of the legs and hence withdrawal from the female formation.

10 The end fitting may be arranged to be tiltably connected to a support structure of the roof.

The support structure may be an eaves structure or it may comprise a central support associated with a valley region of the roof.

15 A gasket or weatherstrip may be carried by the fitting to co-operate with the underside of the roofing panel.

The gasket or weatherstrip may be located inwardly of the end stop.

20 The fitting may be provided with a water drainage channel located outwardly of the gasket or weatherstrip.

25 The first portion may be connectable to the support structure in such a way that it cannot be withdrawn in a direction perpendicular to the longitudinal axis of the support structure. For example, the first portion may be provided with an enlarged head which is slidably received within a longitudinally extending channel associated with the support structure but cannot be withdrawn through the open mouth of the channel.

In an alternative embodiment of the invention, the first portion may be connectable by push-fit registry of co-operating locating portions associated with the first portion and the support structure, e.g. as disclosed in published UK Patent Application No. 2378207 and pending UK Patent Application No. 0130631.5, the disclosures of which are  
5 incorporated herein by this reference.

Thus, one locating portion may include a pair of oppositely directed wing portions which can deflect towards one another to allow insertion through an entry opening of the other locating portion but which restore once inserted and block withdrawal of said  
10 one locating portion. The blocking action may be implemented by co-operation between the free ends of the wing portions and the margins of the entry opening, e.g. in such a way as to prevent deflection of the wing portions towards each other.

Said one locating portion may be provided on the first portion of the end  
15 fitting while the other locating portion may provided on the support structure, or vice versa.

The locating portions may be of generally part-circular configuration, one male and the other female, and the arrangement may be such that the male part forms a  
20 knuckle fitting within the female part which may be a socket associated with the eaves structure.

The end fitting may be of a plastics material or it may of a metal or metal alloy particularly one which may be extruded, e.g. aluminium.  
25

The invention will now be described by way of example only with reference to the accompanying drawings in which:



Figure 1 is a sectional view through the eaves structure of a pitched conservatory roof, illustrating one form of roof panel end fitting; and

Figure 2 is a sectional view illustrating a second form of end fitting suitable for use in a valley region of a conservatory roof.

Referring to Figure 1, a pitched conservatory roof comprises a number of spaced glazing bars (not shown) between which polycarbonate or like roofing panels 10 are supported along their edges. The glazing bars extend between a ridge structure (not shown) and a box section eaves structure 12 which may be manufactured as an aluminium or aluminium alloy extrusion. The panels are supported with their ends overhanging, and in spaced relation with, the eaves structure 12 to drain into guttering (not shown). The eaves structure 12 surmounts a side of the conservatory.

Associated with the lower or forward ends of the panels 10 is a 2 part end fitting 14 which may be manufactured as a plastics extrusion or a metal extrusion such as an aluminium or aluminium alloy extrusion. Each end fitting 14 extends between a pair of adjacent spaced apart glazing bars and has at its forward end an upwardly projecting end stop 16 for co-operation with the associated panel end and also with a separate panel end cover 18 of the fitting. The cover and the end stop are substantially co-extensive with the fitting 14 and extend between the adjacent glazing bars.

The fitting 14 includes a base 20 which extends beneath and in spaced relation with the underside of the panel 10. At or adjacent its rearward edge, the fitting is provided with a downwardly directed projection 22 having a formation 24 for engagement with the eaves structure 12 in order to locate the end fitting. The nature of the engagement may be such that the fitting is able to tilt about the location of engagement in accordance with the intended pitch of the roof. In the illustrated embodiment, the engagement between

the fitting 14 and the eaves structure 12 comprises interengageable male and female formations and to this end the formation 24 comprises an enlarged head which is trapped within a channel 28 which may be integral with the eaves structure 12. The head 24 and the channel 28 may be substantially co-extensive with the fitting in the lengthwise direction of the latter. The arrangement is such that the base of the fitting is assembled to the eaves structure by insertion of the formation 24 into the channel 28 at one end of the eaves structure and sliding the fitting lengthwise to the desired position. In this way, the fitting 14 is rendered captive to the eaves structure.

In a modification, instead of endwise/sliding engagement as shown in Figure 1, the engagement between the fitting and the eaves structure may be via a push-fit arrangement as disclosed in published UK Patent Application No. 2378207 and pending UK Patent Application No. 0130631.5, the entire disclosures of which are incorporated herein by this reference.

The end stop 16 and the end cover 18 are arranged to be coupled together in such a way that the top wall 30 of the end cover can be brought into close overlying relation, e.g. contact with, the upper surface of the panel 10, while accommodating roof panels of different thicknesses, e.g. 25 mm and 35 mm. The cover 18 also includes a front wall which overlies the end of the roofing panel 10 and the end stop 16 so as to conceal them from view.

The coupling between the end stop 16 and the cover 18 may be such that, once engaged together, the end cover 18 is captive with the end stop and cannot be separated other than by use of force which results in breakage of one or both of the components. In the illustrated embodiment, the panel end cover 18 and the end stop 16 are provided with male and female formations 32, 34 which interfit with a latching or ratchet-type action. Thus, as shown, the male formation 32 may comprise a pair of divergent legs

having lateral projections 36 which insert into a channel 34 having sawtooth-like projections 38 to provide a ratchet-type action which strongly resists withdrawal of the end cover 18 from the end stop 16 once the two components have been engaged with each other.

5

It will be understood that the formations 32, 34 will be designed to allow the extent of insertion of the legs 32 into the channel 32 to such an extent as to accommodate both 35 mm and 25 mm panel thicknesses. To increase the resistance to withdrawal of the end cover 18 from the end stop 16, a wedge may be provided for insertion into the channel 32 so as to be received between the legs 32 thereby blocking inward flexing of the same and preventing return movement of the legs out of the channel 34. Differently dimensioned wedges may be employed according to the thickness of the roofing panel to be accommodated.

10

The gap between the base 20 of the fitting and the underside face of the panel is bridged by a weatherstrip or gasket 40 which is separate from the fitting 14 and is engaged with the fitting at a suitable location, e.g. channel 42 as illustrated. To aid drainage of any water collecting within the fitting, the base 20 is configured with a channel 44 for collection of any water so that the water can flow lengthwise of the fitting (and the eaves structure) to a suitable collection point.

15

20

25

Referring now to Figure 2, a pair of sloping roofing panels 50 (supported along their long edges by unshown glazing bars) terminate in the vicinity of a valley region of a conservatory roof construction. The valley includes a central support 54 such as an aluminium extrusion, the long axis of which extends perpendicularly to the plane of the paper. End fittings 56 are tiltably mounted one on each side of the central support to allow the pitch to be adjusted according to requirements. Each end fitting 56 comprises a base which projects forwardly of the associated panel end and has an upturned section 60 to

form a gulley 58 in which water from the associated panel can be collected. The upturned sections 60 include fulcrum formations 62 for engagement with locating grooves 64 on the central support 54 to allow tilting as described above.

5            Each fitting 56 is provided with an end stop 66 for co-operation with the associated panel end and also with an end cover 68 of the fitting in the manner described above with reference to Figure 1 so as accommodate roofing panels of different thicknesses. In Figure 2 only one end cover 68 is illustrated but it will be appreciated that each end fitting will include an end cover 68 in practice. A gasket or weatherstrip 70 is  
10   provided for making sealing contact with the underside of the panel 50.

            The gap between the adjacent upturned sections 60 of the fittings is bridged by curved sections 72 which may be integral with the central support and are arranged so as not to impede tilting of the fittings 56. Capping 74 is provided at the upper end of the  
15   central support and covers 76 are provided for coupling to the undersides of the fittings 56 by co-operating formations 82, 84. In Figure 2, the covers 76 are shown prior to fitting to the fittings 56. Each fitting may be extruded with a water drainage channel 80 extending lengthwise of the fitting and located outwardly of the gasket or weatherstrip 70. As in the embodiment of Figure 1, the components 56, 58 of the end fittings illustrated in Figure 2  
20   may be produced as plastics or metal (e.g. aluminium) extrusions.

            Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance, it should be understood that the Applicant claims protection in respect of any patentable feature or combination of  
25   features disclosed herein and/or shown in the drawings whether or not particular emphasis has been placed on such feature or features.

## CLAIMS

1. A roofing structure comprising at least one roofing panel supported by glazing bars and an end fitting including a first portion underlying one end of the roofing  
5 panel and a second portion which overlies the panel, the first and second portions being separate from one another and being connectable together to allow panels of different thicknesses to be accommodated between them.
2. An end fitting for use with a roofing panel supported by glazing bars, the  
10 fitting including a first portion being adapted in use to underly one end of a roofing panel and a second portion which is adapted in use to overly the panel, the first and second portions being separate from one another and being connectable together to allow panels of different thicknesses to be accommodated between them.
- 15 3. A structure or fitting as claimed in Claim 1 or 2 in which the first and second portions are connectable together via interfitting male and female formations.
4. A structure or fitting as claimed in Claim 1, 2 or 3 in which one of the first  
20 and second portions is provided with an end stop for co-operation with the roofing panel to prevent the panel from sliding downwardly.
5. A structure or fitting as claimed in Claim 4 in which the end stop is constituted by one of the formations for connecting together the first and second portions.
- 25 6. A structure or fitting as claimed in Claim 3 or Claim 4 or 5 when dependent on Claim 4 in which the male and female formations interconnect with each other in such a way as to resist subsequent separation of the second portion from the first portion.

7. A structure or fitting as claimed in Claim 3 or Claim 4, 5 or 6 when dependent on Claim 4 in which the male and female formations interconnect with a latching or ratchet-type action.
- 5 8. A structure or fitting as claimed in any one of the preceding claims in which the end fitting is arranged to be tiltably connected to a support structure of the roof.
9. A structure or fitting as claimed in Claim 8 in which the support structure is an eaves structure or a central support associated with a valley region of the roof.
- 10 10. A structure or fitting as claimed in any one of the preceding claims in which a gasket or weatherstrip is carried by the fitting to co-operate with the underside of the roofing panel.
- 15 11. A structure or fitting as claimed in any one of the preceding claims in which the fitting is provided with a water drainage channel.

## ABSTRACT

### PANEL END FITTINGS

A roofing structure comprises a support structure, e.g. an eaves beam or the  
5 central support structure of a valley region of the roof, glazing bars supported on the eaves  
structure, one or more roofing panels supported by the glazing bars and two part end  
fittings. Each fitting comprises a first portion underlying one end of the roofing panel and  
coupled to the eaves structure and a second portion connectable to the first portion in  
overlying relation with the panel. The first and second portions are adjustably connected  
10 together so as to accommodate panels of different thicknesses.





Fig 1

